

## CASTING PLASTER INDUSTRIAL PLASTER

Knauf Casting plasters are formulated for use in ceramics to produce working molds for slip water absorption, superior absorption rate and quick drying ability while maintaining excellent firmness and a smooth surface throughout the mold life cycle.

### TYPICAL PHYSICAL PROPERTIES

Product	Supercast NR	PEARL	TW REGULAR SP	DURACAST CM
Plaster to Water Ratio (%P/W )	150	125	135	140
Water to Plaster Ratio (%W/P)	67	80	74	71
Initial Setting Time by Knife Setting (minutes)	10 - 14	10 - 15	7 - 9	11 - 15
Final Setting Time by Shore A (minutes)	18 - 26	22 - 28	16 - 24	17 - 23
Fluidity by Schmidt Ring (mm)	180 - 220	250 - 290	210 - 230	205 - 240
Flexural Strength (MPa)	≥ 5.4	≥ 3.4	≥ 3.9	≥ 4.9

### MIXING INSTRUCTIONS

#### MIX PREPARATION

Use potable water at temperature around 20 - 37 °C. Because variations in slurry (Plaster powder and water mixture) temperature produce variations in set time, it is important to keep both Plaster powder and water in a stable temperature environment prior to use. The higher the temperature of the slurry, the shorter the set time. Conversely, the lower the temperature of the slurry, the longer the set time.

Weigh both the plaster powder and water prior to use for each mix. The water-to-plaster ratio is critical because it governs the strength and absorptivity of the mold.

#### SOAKING

Sift or strew Plaster powder into the water slowly and evenly. Do not drop large amounts of Plaster powder directly into the water as proper soaking of Plaster powder may not occur. Plaster powder should be fully dispersed in the water prior to mixing. Small batches require less soaking time than large batches.

#### MIXING

Mixing Plaster powder slurry is one of the most important steps in producing Plaster molds with maximum strength, hardness and other important properties.

Mechanically mixed slurries develop uniform molds with optimal strengths. Plaster powder can be mechanically mixed through both batch and continuous processes. Proper blade and bucket dimensions are important for obtaining the best batch mix.

Longer mixing times result in higher mold strength and shorter setting times.

## **POURING**

To prevent air entrainment and provide a uniform, smooth surface, careful pouring of Plaster powder slurry is necessary. Agitation/vibration of the filled mold is a further step used to prevent air at or near the mold surface. Whenever possible, Plaster powder slurry should be poured carefully in the deepest area so that the slurry flows evenly across the surface of the mold.

Pouring a large amount of slurry directly on the face of the mold may result in slight densification of the Plaster mold at the point where it strikes the surface of the mold. This produces a hard spot, giving uneven absorption.

## **DRYING**

All Plaster molds should be dried as quickly as is safely possible after manufacture so that maximum physical properties can develop. Dry to a constant weight.

The best drying rooms or ovens provide:

- 1) uniform and rapid circulation (minimum of 5 - 10 mps) of air with no "dead spots" having little or no air movement
- 2) equal temperatures throughout the entire area
- 3) provisions for exhausting a portion of the air while replacing it with fresh air

High humidity surrounding the drying room or oven inhibits drying efficiency because the air pulled into the room is incapable of picking up much moisture from the molds.

The maximum temperature at which Plaster molds are safe from calcination is 49 °C. With substantial free water in the mold, a higher drying temperature can be used without difficulty. As drying progresses, the temperature must be reduced to prevent the calcination. Before removing molds from the dryer, the temperature should approach that of the area around the dryer to prevent the thermal shock.

## **STORAGE AND USE**

When properly used, Plaster powder is safe to handle and easy to work with. Keep indoors in a dry, stable environment. Do not stack more than two pallets high. Keep from drafts. Rotate stock. Always follow handling and use directions and safety warnings on the package.

## **SHELF LIFE**

Best before 6 months from manufacture.

**For more information**  
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